

*An Ongoing Romance:  
Literature and Emerging Technologies*

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In July 2014, surgeons at ‘Sant Joan de Déu’ Hospital, Barcelona, removed a neuroblastom tumor from the abdomen of a five year old child. The successful operation on this aggressive tumor could not have been done if the surgeons had not had an accurate mock-up tumor on which to rehearse the operation in advance. The device that made this possible was a 3D printer.

Events like this highlight the relevance of the role of technology in human lives. This paper suggests some of the future possible dialogues between literature and technology, especially 3D printers, and reintroduces the question of whether we can find a literary meaning in technology or not (WID 2013).

Although neither of them seem eager to admit it, the relationship between literature and technology goes back a long, long way. Technology supplies most of the artifacts we interact with and share space with. From blades and flint stones to iphones, the narratives of literature and technology have encompassed human knowledge (Arnold 1883), drunk from the same well of imagination and, ultimately, become means to express views and ideologies.

One early appearance of technology was in drama narratives, when Greek playwrights, especially Euripides, resorted to a *Deus ex Machina* – a god lowered to the stage by a mechanical apparatus. Despite the fact that this could have been a makeshift solution to solve a problem, *Deus ex Machina* were conceived to solve the dilemmas of the human character foreseeing an ongoing interdependence that it is still alive today. Several centuries later, when Johannes Gutenberg invented his mobile - type printing press in 1445, the printing trade was already an established business thanks to the Chinese, who invented printing from woodcuts during the Tang dynasty (618-906 AD). However, it was after Gutenberg’s invention that the world changed. The bars that kept knowledge confined to a small group of ‘chosen ones’ were broken forever. Not only was knowledge spread to countless people, but readers who were apart from each other in time and space were able to share the same information. Something else happened: literature itself became a form of technology that involved information processing. The romantic marriage was completed.

Any revolution that it is worth mentioning has an impact on time and space. When Heinrich Heine said that the railway killed space and we were left only with time (Schivelbush 1986), he probably undervalued the impact of one of the biggest scientific discoveries in history. The railway represented the road to progress - to an alluring modernity, which also cast fear and doubt into people. Dickens, who survived a train crash in 1865, depicted his fears in *The Signalman*, a ghost story that evokes the ambivalent position of the individual before the automation of industry. In a letter written in August 1837, the French writer Victor Hugo described the view from a train window as: 'there are no longer any points, everything becomes a streak... the towns, the steeples, and the trees perform a crazy, mingling dance' (Schivelbush 1986). That is a familiar description for anyone who travels nowadays on high speed trains. The impact of technology in human lives became massive when it deeply altered human perception. Before that, technology had supported human advances in an almost secondary role. From the Industrial Revolution onwards, the submissive partner would grow rebellious.

Modernity brought the breakdown of the perspectival continuum and sensory overload became a characteristic of modern times. In the *Archeology of Knowledge* (1969), Michel Foucault noted that a book is a whole system of referencing, 'a node within a network'. This definition closely resembles Theodor Nelson's description of the hypertext as a "non-sequential writing text that branches and allows choices to the reader" (Landow 2008). Nelson added that the text was best read on an interactive screen, a XX century artefact that has changed our *modus-vivendi* forever. Inventions such as hypertext and hypermedia have entered into our lives and they will probably stay for a long time. The systems that link various forms of information, such as data, texts, graphics, video and audio create a type of text that allows the reader to jump from a linear to a multi-linear reading mode. The advantages of this non-sequential writing and reading have not gone unnoticed. In an interview about the act of writing using electronic devices (Hickey 2014), writer Tom McCarthy said the World Wide Web provides him with 'memory', and the possibility of visiting 'virtually' any scenario he wants to re-create in his novels.

Footnotes did the job for us and still do, but a click is faster. If you do not agree, just ask students. Education has long implemented technology in its teaching methodology. For Sarah Porter, technology, among other advantages, provides access to resources in appropriate time, creates forums to discuss and exchange ideas and is an ideal tool for research (Porter 1999). Anyone interested in Postcolonial Studies would easily find how technology shapes and influences its discourses. Postcolonial literature dwells on technology, explains the accounts for the West's scientific and technological projects, explores the strengths and limitations of Western societies and describes their impact on their cultures. I am sure I am forgetting other arguments – such as Geert Lovink's view on technology as a way to change "the means of media representations and solve the artificial scarcity of channels of expression" (Landow 2008, 421). It is obvious that technology provides a voice to the anonymous production of learned postcolonial colonies that previously had to read about themselves in European and American papers and novels, written by foreigners. The role played by platforms of social media such as 'twitter' in political networking, as happened in the 'Arab Spring', is another argument. Let alone that without technology, I would not be able to write this paper nor you read it. As Jurgen Habermas pointed out, the legitimate human interest in the technical control of nature "functions as an ideology, a screen that masks the value-laden

character of government decision making in the service of capitalist *status quo*" (Bohman and Rehg 2014).

That being said, I would add that technology, literature's partner, is a complex, metamorphic and fascinating spouse to live with. I started this paper suggesting an exploration of future dialogues between literature and technology. Soon after I started writing about it, I felt unsure about the outcome of this approach. A lifelong fascination with literature and a recent one with 3D printers may enable me to find new interconnections that, up until now, were only a figment of my imagination. I also wondered: is it meaningless to look for it?

It is time to talk about 3D printers. This state of art technology was born in 1983 under its creator's leadership, an American physicist and engineer named Chuck Hull. Back then, nobody realised the impact this invention would eventually have in the world. In fact, even today, the possibilities of 3D printers are unknown and are opening up new opportunities from science to art. Using a CAD (computer aided design) program, a 3D printer can build a three dimensional product. It does it by building successive layers of the product using powder, molten plastic or metals. Like a photocopy machine, a 3D printer can produce multiples copies. The revolutionary thing about this technology is that it is capable of producing practically anything - from jewellery to mobile phones, from body parts to food, and from aircraft parts to houses (Moorhead 2014).

This new technological revolution has caught the media's attention, as well as that of a controversial voice in the international community: the economist Jeremy Rifkin. Rifkin has been an advisor to the European Union for the past decade and he is the architect of The Third Industrial Revolution, a long-term sustainability plan to address some of our most pressing topics. In the new era, Rifkin foresees 3D printers as revolutionary agents that can potentially allow anyone to be their own manufacturer, save energy, reduce the use of material, increase energy efficiency and democratize manufacturing by reducing marketing costs that previously could only be afforded by giant firms (Rifkin 2014). These views are shared by the *M-Maker*, a movement based on the DIY premise. This collective is interested in new and unique applications of new technologies and it is engaged in teaching how 3D printers operate (*El País* 2014). Of course, 3D printers have their detractors. The making of weapons clearly represents (one of) the dark sides of this new technology. Recently I watched an episode of the TV series, *Elementary*, where a crime was committed by a weapon made with a 3D printer. The gun was made disappear from the crime scene by being dissolved in a milk bottle full of acetone.

I would like to reintroduce now one question raised earlier: is technology divorced from literary meaning? Searching for answers, I read an article on novelist Colum McCann in a Spanish newspaper. McCann (Lago 2014) said that 'fiction and non-fiction are not very different. What counts is the language'. For McCann what really matters is to write novels that echo the crucial social worries of a decade, to write novels like Steinbeck's *Grapes of Wrath* that shocked people and helped to change the course of events. My personal view is that 3D printers shock people and can change the course of events.

Then I followed in my research and dug through others sources. Luck smiled on me. Consulting the online library of the Institute Cervantes I found a relevant article by Tomas Albaladejo. He said that, relationships between new technologies and literature take place in the field of experimental creativity (Albaladejo 2009). Literature has

always been the locus for experimenting with new models of creation. Oswald de Andrade's digital poetry alters the visual materiality of texts in inventive ways that remind us of 'twitter'. Hologram poems, on the contrary, become a time-space event that seek to express a discontinuity of thought, in which the perception of the viewer varies depending on his/her physical location. The info-aesthetics of Lev Manovich is a new discipline that explores the impact of aesthetics and representational techniques in society.

However, it was the research in WID (Wisconsin Institute for Discovery), that made me regain the trust of finding a satisfactory answer to the question. Wondering about the general belief that the world of social media has affected negatively our use of language, postdoctoral researcher Carrie Roy and her colleagues analysed 250 Victorian-era novels to answer a series of questions of how the use of language had varied from the late 1830s to the early 1900s. The results showed that authors used longer words during the 1830s than later on. The explanation for the shift in word length was that books were no longer addressed to elite readers but to the masses. The researchers then looked for a unique way to present their results and thought of 3D printers. First, they chose 20 Victorian novels written by men and women writers. Then, they pulled out words that each group used exclusively. Finally, with the help of a 3D printer, they created inkwells to showcase their findings. At the end of the research, Carrie Roy said that "3D printing offered a way to play around with the text, to directly incorporate those words into a physical object that people could experience first hand. Being able to 'read' numbers is a powerful component of what we are doing here" (WID 2014).

Through my research I learned that what I thought was a figment of my imagination – the possibility of literary dialogues between literature and 3D printers – is already a subject of research for learned minds. Generally speaking, the material aspects of the written world are of great interest for some. Projects such as the 'Materiality of Text', carried out by Durham University, point in this direction. Aspects such as the visualization of texts in physical context -monumental or miniature; the form and varieties of lettering; the placement and arrangement of the text in private and public spheres, the issues of visibility and legibility and so on are already subjects that arouse interest and research. The romance between literature and technology is undergoing a new rebirth.

To conclude I must say that I believe this is only the beginning of a new era. New dialogues between literature and technology are in progress. In fact, they have never stopped. From Jules Verne's novels to Mary Shelley's unforgettable Frankenstein, from Play Stations to movies, literary and technology narratives are interweaved. It is a mutual and ongoing seduction. A monster or a 3D printer, machines spur our imagination, push our limits and force all of us, visionaries, writers, critics, the general public to constantly redefine ourselves and how we impact on economies, culture, society and ideology. Who can resist such an attraction?

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